AQUATICS TEST 2005 (STATE COMPETITION) **TEAM**_____

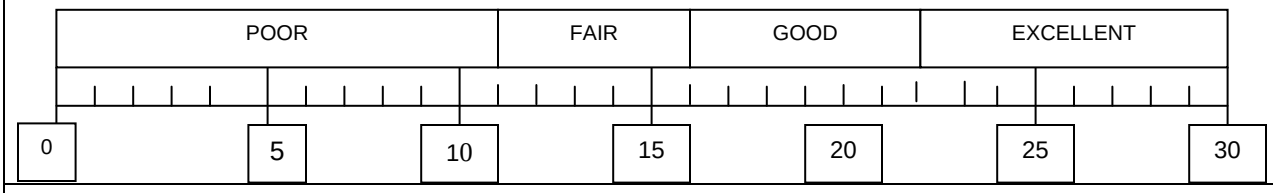
1. Water Quality - Field Tests Fill in the answers in the appropriate spaces.

Temperature _____C Dissolved Oxygen _____ pH _____ (**3 points each = 9 points total**)	**Water Odors** (**2 points**) ☐ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Canopy Cover** (**2 points**) ☐ Open ☐ Partly shaded ☐ Shaded **Turbidity (if not measured)** (**2 points**) ☐ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other_____

2. Macroinvertebrate identification and tally. (**Total of 30 points**) Identify the samples (**2** points each) by placing the number of the appropriate sample next to the name given in the table below. Add and multiply as indicated (**1** point each) and provide the Cumulative Index Value (**2** points). Circle the appropriate area on the scale. (**2** points)

GROUP 1 TAXA	**Code**	**GROUP 2 TAXA**	**Code**	**GROUP 3 TAXA**	**Code**
Water penny larvae		Damselfly nymphs		Blackfly larvae	
Mayfly nymphs		Dragonfly nymphs		Aquatic worms	
Stonefly nymphs		Cranefly larvae		Midge larvae	
Dobsonfly larvae		Beetle larvae		Pouch snails	
Caddisfly larvae		Crayfish		Leeches	
Riffle Beetle adults		Scuds			
Other snails		Clams			
		Sow Bugs/Isopods			
Number of taxa present		Number of taxa present		Number of taxa present	
Times index value of **3**		Times index value of **2**		Times index value of **1**	
CUMULATIVE INDEX VALUE =		(**2** points)			

BIOLOGICAL QUALITY ASSESSMENT SCALE (**2** point)



3. Match the following: (**1** point each = total of **10** points)

_____	seine	a.	energy-producing system caused by sunlight.
_____	riffle	b.	animal-like microorganism
_____	littoral	c.	shallow edge of lakes and ponds
_____	surber sampler	d.	water sampler
_____	Kemmerer bottle	e.	material used for energy from outside an aquatic system
_____	zooplankton	f.	shallow turbulent stream habitat
_____	embeddedness	g.	material used for energy from within an aquatic system
_____	photosynthesis	h.	fish collection method
_____	allochthonous	i.	macroinvertebrate collection method
_____	autochthonous	j.	build-up of sediment around bottom structure

4._____ Algal biomass data would be of particular interest for assessing which of the following types of pollutants (**1** point):

a. acid mine drainage
b. nutrient enrichment/organic pollution.
c. chemical pollutants.
d. sediment/erosion problems.
e. heavy metals.

5._____ Where is the most biologically diverse area of a stream? (**1** point)

a. riffle.
b. run.
c. pool.
d. glide.

6._____ What percent of the water that covers the earth can be used for drinking water? (**1** point)

a. 90 percent
b. 75 percent
c. 25 percent
d. 2 percent

7. Put the following sediment particles in order from smallest to largest: (**5** points)

pebble silt boulder cobble sand

_____

8._____ True or False: There are three things that define a wetland. They are: the amount of water in the area, the type of animals living there, and the type of soil. (**1** point)

9._____ Soil changes occur in wetland soil because of (**1** point)

a. vegetation
b. lack of oxygen
c. presence of oxygen
d. topsoil

10._____ Dead, standing trees in wetlands used by wildlife are called (**1** point)

a. shrubs
b. canopy
c. understory
d. snags
e. stumps

11._____ True or false. Wetlands are always wet. (**1** point)

12._____ Streams with the following characteristics generally have higher dissolved oxygen: (**1** point)

a. cold water
b. slow moving water
c. many riffle areas
d. "a" and "c" above
e. all of the above

13. _____ The presence of a federally listed endangered species in a stream would make it which designated use? (**1** point)

a. drinking water
b. warm water aquatic habitat
c. outstanding resource water
d. all of the above

14. List five ways to conserve water (**1 point each, Total of 5 points**)

15. _____ Which would you expect to have higher Specific Conductance? (1 point)
    a. distilled water
    b. rain water
    c. sea water
    d. all of the above would be equal

16. Name six of the large river watersheds found in Kentucky: (6 points)

17. _____ How many miles of rivers and streams are there in Kentucky? (1 point)
    a. 852
    b. 5,936
    c. 24,263
    d. 89,431

18. _____ A factory uses water to cool its machinery. This water is then returned to the river. What type of pollution might this cause? (1 point)
    a. thermal
    b. toxic
    c. organic
    d. nonpoint source

19. What are the three flow regimes most commonly found in a stream? (3 points)

20. Name two types of nonpoint source pollution: (2 points)

21. Name two arguments for damming a stream: (2 points)

22. Draw and label a simple diagram of the hydrologic cycle: (**10** points)